Summary of Cancer Incidence and Mortality for Greenwood County, SC

Cancer Incidence in Greenwood County

The first step in the analysis of cancer data for this county was to look at the number of new cancer cases diagnosed in the county and compare this to the number of cancer cases expected in this county (see Table 1). This first step determines if there is anything unusual with cancer patterns in the area. The number of "expected" cancer cases is calculated by using South Carolina cancer rates and applying them to the population of each county.

Table 1 shows what types of cancer were diagnosed in Greenwood County from 1996-2000, and how many cancer cases were expected. Overall, a higher number of cancer cases was observed compared to the expected number of cancer cases; however, this excess was not statistically significant. The most common types of cancer in this county were female breast, lung, prostate, and colon/rectum cancers. These types of cancer are also the most common cancers occurring across all of South Carolina.

The analysis revealed the number of **Colon/Rectum** cancer cases was significantly higher than expected. The risk of developing colon/rectum cancer increases greatly after age 50. About 90% of people found to have colorectal cancer are older than 50. Obesity, a diet high in animal fat, physical inactivity and smoking also increase risk. Also a family history of polyposis or a personal history of colon/rectum cancer, intestinal polyps, or chronic inflammatory bowel disease increase the risk of developing colon/rectum cancer.

Cancer Deaths in Greenwood County

To assess cancer deaths in Greenwood County, cancer mortality data from 1998-2002 were used. The process used to analyze new cancer cases was also used to analyze cancer deaths. Table 2 shows the number of cancer deaths that occurred in Greenwood County and the number expected. Overall, a higher number of cancer deaths occurred than expected in Greenwood County; however this excess was not statistically significant.

The analysis revealed two cancer sites **(Female Breast and Leukemia)** had a significantly higher number of deaths than expected. Each of these cancers is a separate disease with different risk factors.

Female Breast cancer risk factors include increasing age, a family history of breast cancer, prior history of breast cancer or benign breast disease, early age at onset of menstruation, late age at menopause, and late age at first pregnancy or not having children. Also, about 1 in 10 breast cancers are linked to changes in certain genes.

There are four main types of leukemia, and each has a totally different set of risk factors associated with it. Chronic lymphocytic (CLL) and chronic myelocytic leukemias (CML) occur most often in adults. The only known inherited risk factor for chronic leukemia is having first degree relatives who have had CLL. Long term contact with herbicides and pesticides among farmers can increase their risk of CLL.

Acute lymphocytic leukemia (ALL) occurs most often in children. Acute myelocytic leukemia (AML) occurs mostly in adults. Smoking is a proven risk factor for AML. About 1/5 of AML cases are caused by smoking. Also, scientists have discovered that people exposed to benzene or to large amounts of radiation (such as in people receiving treatment for other cancers) have an increased risk of ALL and AML.

Conclusions

To summarize, overall a higher number of cancer cases occurred in Greenwood County than expected. The number of cancer deaths was also higher than expected. Although the number of cases and number of deaths were higher than expected, they were not statistically significant. There was one specific type of cancer with an increased number of cases. The risk factors associated with cancer of the colon/rectum are primarily lifestyle related (i.e. high fat diet, lack of physical activity, and smoking). Cancers with life-style related risk factors are not likely to result in a cluster.

Female Breast cancer and Leukemia had a higher number of cancer deaths than expected. A main risk factor for Female Breast cancer is increased age. Female Breast cancer is most common among post-menopausal women. Diagnosis with advanced breast cancer leads to a poor prognosis, generally ending in death. Because the number of female breast cancer cases was not statistically significantly higher than the number expected, and thirty-six percent of the female breast cancer cases

were diagnosed in late stage of disease, it is not alarming that the number of breast cancer deaths was higher than expected.

Leukemia is categorized different types with different types of risk factors. The total number of leukemia deaths changed from year to year, however the number of deaths per type of leukemia was consistent over time. There was no one type of leukemia with a high number of deaths each year.

In order for a true cancer cluster to exist, the number of cancers occurring must be more than would be expected by chance. Along with statistical testing, there are several other criteria that determine whether a true cancer cluster exists. First, a cancer cluster would more likely involve rarer types of cancer rather than more common cancers like lung or breast cancers. Also, a cancer cluster would occur with one specific type of cancer rather than having excesses in several different types of cancer.

Taking all these criteria into consideration, the South Carolina Central Cancer Registry determined there is no evidence of cancer clustering in Greenwood County.

For questions about this report, please contact Susan Bolick-Aldrich, MSPH, Director of the South Carolina Central Cancer Registry.

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Table 1. Analysis of New Cancer Cases in Greenwood County, 1996-2000

Site	Observed	Expected	Observed/Expected	Chi-Square Test*
Breast (Female)	247	225.60	1.09	2.03
Lung/Bronchus	241	241.74	1.00	0.00
Prostate	226	246.39	0.92	1.69
Colon/Rectum	**207**	**177.50**	**1.17**	**4.90**
Bladder	64	61.25	1.04	0.12
Non-Hodgkin Lymphoma	63	49.65	1.27	3.59
Melanoma	55	50.30	1.09	0.44
Oral/Pharynx	44	42.80	1.03	0.03
Uterus	41	37.50	1.09	0.33
Kidney/Renal Pelvis	31	38.14	0.81	1.34
Leukemia	29	29.70	0.98	0.02
Stomach	29	24.46	1.19	0.84
Pancreas	26	34.78	0.75	2.22
Ovary	25	25.25	0.99	0.00
Brain/CNS	25	20.34	1.23	1.07
Esophagus	21	20.72	1.01	0.00
Multiple Myeloma	20	17.27	1.16	0.43
Larynx	19	18.57	1.02	0.01
Thyroid	19	15.17	1.25	0.97
Cervix	16	20.30	0.79	0.91
Other Digestive	10	6.50	1.54	1.89
Testis	9	5.74	1.57	1.86
Liver	8	10.75	0.74	0.70
Soft Tissue	8	8.16	0.98	0.00
Other Female	8	8.02	1.00	0.00
Hodgkin Disease	6	6.65	0.90	0.06
Other Respiratory	3	5.50	0.55	1.14
Unknown/Ill-Defined	46	NA	NA	NA
All Sites	1574	1518.97	1.04	1.99

Excludes in situ cases of cancer to allow for comparison.

Cancer sites with less than 5 cases of cancer expected are not analyzed due to the unreliability of statistical tests based on small numbers. These sites have been removed from this table.

*The Chi-Square statistical test allows us to determine if the difference between what is observed and what is expected is significant. If the value is greater than 3.84, then we are 95% confident that the observed number of cases is significantly different from the expected number of cases.

Prepared by: SC Central Cancer Registry, Office of Public Health Statistics and Information Services, Department of Health and Environmental Control, 2600 Bull St., Columbia, SC 29201

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Table 2. Analysis of Cancer Deaths in Greenwood County, 1998-2002

CancerSite	Observed	Expected	Observed/Expected	Chi-Square Test*
Lung/Bronchus	200	211.90	0.94	0.67
Female Breast	**73**	**53.23**	**1.37**	**7.34**
Colon/Rectum	65	72.24	0.90	0.72
Prostate	60	50.52	1.19	1.78
Unknown/Ill-Defined	38	44.32	0.86	0.90
Pancreas	37	40.23	0.92	0.26
Leukemia	**36**	**25.73**	**1.40**	**4.10**
Non-Hodgkins Disease	35	26.33	1.33	2.86
Multiple Myeloma	25	16.99	1.47	3.78
Stomach	19	18.36	1.03	0.02
Brain/CNS	18	17.86	1.01	0.00
Esophagus	18	17.43	1.03	0.02
Ovary	18	16.87	1.07	0.08
Bladder	17	14.03	1.21	0.63
Oral/Pharynx	17	13.51	1.26	0.90
Kidney/Renal Pelvis	11	14.75	0.75	0.96
Uterus	11	8.59	1.28	0.68
Melanoma Of Skin	9	8.01	1.12	0.12
Liver	8	13.82	0.58	2.45
Cervix	5	7.09	0.71	0.62
Larynx	3	5.64	0.53	1.24
Soft Tissue	3	5.01	0.60	0.81
All Sites	744	725.44	1.03	0.47

Excludes in situ cases of cancer to allow for comparison.

Cancer sites with less than 5 cases of cancer expected are not analyzed due to the unreliability of statistical tests based on small numbers. These sites have been removed from this table.

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